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Can Path Dependence Explain Institutional Change?
Two Approaches Applied to Welfare State Reform

Bernhard Ebbinghaus



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Abstract

Path dependence as a concept in institutional theories has become increasingly popular in economics and other social sciences. The key idea is that in a sequence of events, the latter events are not (completely) independent from those that occurred in the past. Yet, common usage of the concept often subsumes two markedly different models and approaches to understand historical sequencing. The two main processes of the past shaping the future – diffusion and developmental pathways – must be distinguished analytically. This paper juxtaposes (1) the unplanned “trodden path” that takes shape through the subsequent repeated use by other individuals of that spontaneously chosen path, and (2) the “branching pathways” or juncture at which one of the available alternative pathways must be chosen in order to continue a journey. Furthermore, the typical approaches and their explanatory purchase are discussed in reference to explanations of institutional change. The paper shows that the first path dependence theorem is too deterministic and inflexible, whereas the second approach is sufficiently supple to analyze various forms of institutional change.

Zusammenfassung

Pfadabhängigkeit wird in den Sozial- und Wirtschaftswissenschaften zunehmend als Konzept institutioneller Theorien angewendet. Der Grundgedanke ist, dass in einer Sequenz von Ereignissen (oder Entscheidungen) spätere nicht (vollkommen) unabhängig von vorangegangenen sind. Jedoch wird in gängigen Anwendungen des Konzepts oft versäumt, nach zwei äußerst unterschiedlichen Verständnissen historischer Sequenzen zu differenzieren. Die zwei Prozesse der Strukturierung der Zukunft durch die Vergangenheit – *Diffusionspfade* und *Entwicklungspfade* – sollen analytisch getrennt werden. Dieser Aufsatz unterscheidet (1) den zufälligen „Trampelpfad“, welcher durch die vermehrte Benutzung eines Pfades spontan entsteht, von (2) dem „Scheideweg“, an dem einer der möglichen Pfade gewählt werden muss, um den Weg fortzusetzen. Im Weiteren wird der Erklärungsbeitrag der beiden Ansätze in Bezug auf die Erklärung institutionellen Wandels erörtert. Es zeigt sich, dass das erste Pfadabhängigkeitstheorem zu deterministisch und inflexibel ist, der zweite Pfadabhängigkeitsansatz hingegen offen genug, unterschiedliche Formen institutionellen Wandels zu analysieren.

Contents

1	Introduction	5
2	Path dependence I: “trodden trail” and the diffusion of an institution	7
3	Path dependence example I: unintended consequences of early retirement	12
4	Path dependence II: branching pathways and the structuring of alternatives	14
5	Path dependence example II: multiple pathways of welfare reform	18
6	Institutional theories and self-reinforcing mechanisms	20
7	Conclusion	25
	Bibliography	26

1 Introduction

Two roads diverged in a yellow wood,
 And sorry I could not travel both
 ...
 And both that morning equally lay
 In leaves no step had trodden black.
 Oh, I kept the first for another day!
 Yet knowing how way leads on to way,
 I doubted if I should ever come back.
 ...
 Two roads diverged in a wood, and I –
 I took the one less traveled by,
 And that has made all the difference.
 (Robert Frost, “The Road Not Taken,” 1916)

Over the past two decades, path dependence has become an increasingly popular concept in institutional theories in economics and other social sciences. Indeed, it has developed into a common “short hand” to indicate that the past shapes the future – in short: history matters. However, upon closer analysis, we find two distinctly different interpretations of path dependence that I would like to summarize in two metaphors. One common image is the unplanned “*trodden trail*” that emerges through the subsequent repeated use by others of a path spontaneously chosen by an individual. A different illustration is the “road *juncture*,” the branching point at which a person needs to choose one of the available pathways in order to continue the journey. The path dependence concept thus subsumes two markedly different approaches to understand historical sequencing. The two images of the “trodden trail” and the “road juncture” represent different social processes that in my view must be distinguished analytically: a persistent diffusion path and branching pathways. The first model stresses the spontaneous evolution of an institution and its subsequent long-term entrenchment; the second view looks at the interdependent sequence of events that structure the alternatives for future institutional changes.

Nevertheless, common to both approaches is the key idea that in a sequence of events, the latter decisions are not (entirely) independent from those that occurred in the past. In the language of probability theory, this sequential contingency is called *path dependence*. Path dependence results from non-linear *self-reinforcing* processes – in

This paper is based on a Habilitation lecture at the Faculty of Economic and Social Sciences at the University of Cologne in 2003, a seminar at the Max Planck Institute for the Study of Societies in the same year, and an extended paper presented at the workshop on “Path Dependence” organized by Arbetslivsinstitutet held in Visby, Sweden, August 24–26, 2004. The author is grateful to the participants of the MPIfG seminar and Visby workshop for the discussions, and to Justin Powell (MPIB, Berlin), Raymund Werle (MPIfG, Cologne) and Sigrid Quack (WZB, Berlin) for their detailed comments.

economic terms: increasing returns.¹ In a self-exemplifying manner, the adoption of the path dependence concept in economics since the mid-1980s and somewhat later in the other social sciences demonstrates such a self-reinforcing diffusion process. The astonishingly swift proliferation of the concept must be seen in the context of the revival of institutional theories in economics, political science and sociology.² Neo-institutionalists embraced path dependence as empirical proof of the need to study institutions as resulting from dynamic social processes. We can also observe that some (sub-)disciplines, such as political sociology, depart more substantially from the initial use of path dependence in economics. Such recombining and enlarging the concept to be less restrictive or the “branching out” of different theoretical pathways resembles the second image of path dependence.

Although definitions of institutions abound, they are commonly understood as social rules, norms and ideas (*Leitideen*) that guide, but also restrain, social behavior (North 1990; Lepsius 1990). Seen from an anthropological perspective, institutions are immi- nently functional: as “taken-for-granted” behavioral routines they ease everyday deci- sion-making; as social norms they regulate social interaction; and as cognitive scripts they reduce uncertainty in a complex world. Since some form of stability is a precon- dition for institutions to function, most theoretical and empirical analyses have fo- cused thus far on the persistence of institutions (despite the use of “institutional change” in book titles, e.g. North 1990; Alston et al. 1996). Recently, institutional theorists in various disciplines have pointed out different social mechanisms that sta- bilize institutions through path dependent self-reinforcing processes. For the record, it should be noted that the “old” institutionalists had already alluded to similar proc- esses when referring to “institutionalization” (Stinchcombe 1968).

The equally important questions of *when* and *how* institutions evolve and *why* they change have been less often studied by institutionalist researchers. Thus, in this paper, I raise the question of the degree to which we can explain *institutional change* with the help of the two mentioned path dependence approaches. What are the known social mechanisms of path dependent persistence? Could these also facilitate our explana- tions of change? To address these questions, I proceed in three steps. First, I sketch the rather *deterministic* path dependence model that describes the repetition of one basic

1 In probability theory, “path independence” refers to the independence of two subsequent events: throwing a dice for a second time is unrelated to the first outcome, thus the probabil- ity that a double six will be drawn is: $1/36 = 1/6 \cdot 1/6$. In contrast, “path dependence” de- scribes cases in which the probability of a subsequent event is related to earlier events. In the case of a lottery, when we draw 6 out of 48 balls, the chances to get a particular number at first is $1/48$, but at the second draw the chance is $1/47$ since one ball has already been removed, and so on.

2 As an introduction to institutional economics see (Sjöstrand 1993; Eggertsson 1996), in or- ganizational sociology (DiMaggio/Powell 1991; Nee 1998) and political science (Hall/Taylor 1996; Immergut 1998; Thelen 1999).

decision throughout a network of actors in a process of social diffusion. I discuss this model's shortcomings in explaining institutional change, particularly when it is applied to social institutions. Second, I illustrate the diffusion-like process using examples from my own study of early retirement trends. Third, I introduce the alternative, more *open* path dependence concept and locate its potential for studying historical trajectories of institutional change. Fourth, I draw on institutionalist accounts of welfare state reforms to indicate the use of the open pathway concept. Finally, I review the social mechanisms of self-reinforcing processes, discussing their potential use in explaining institutional change – not only institutional inertia.

2 Path dependence I: “trodden trail” and the diffusion of an institution

A path-dependent sequence of economic changes is one in which important influences upon the eventual outcome can be exerted by temporarily remote events, including happenings dominated by chance elements rather than systematic forces. (David, 1985: 332)

During the early 1980s in the United States, economic historian Paul A. David and system theorist Brian W. Arthur developed the first explicit path dependence concept.³ To model path dependence, Arthur used a poly urn with two differently colored but equally sized sets of balls (Arthur 1994: Chapter 3). Every drawn ball is returned to the urn and doubled by adding a ball of the same color, thus slightly increasing the chances of drawing the same color in the next round. Even though it is always a random process, one color will dominate in the long run due to the positive feedback on already drawn balls of a particular color (the more one color is overrepresented, the more likely it will be drawn in subsequent rounds). Only in the increasingly unlikely event of a balancing out of both colors would there be no long-term positive feedback in either direction.

QWERTY is probably the best known example of path dependence applied to technological innovation (David 1985): the keyboard layout of American typewriters was developed 130 years ago to cope with technical problems of mechanical typewriters, without considering a more efficient keyboard arrangement with respect to typing speed. As users invested in learning this established standard, more optimal alterna-

3 Brian W. Arthur and Paul A. David both taught at Stanford University during the mid-1980s and had exchanged ideas on path dependence (see Arthur 1994: Preface). In 1983, Arthur published his working paper on “increasing returns” with the International Institute for Applied System Analysis in Vienna, which was first published in an academic journal (*Economic Journal*) as late as 1989 (Arthur 1994: Chapter 2). His article in *Scientific American* of February 1990 popularized “positive feedbacks.” David’s six-page QWERTY paper (David 1985) soon became a *locus classicus* for path dependence theory.

tive keyboards could not later overcome the predominance of QWERTY, even during the fundamental technology-driven switch from mechanical to electric typewriters and then to computer keyboards.⁴ The diffusion of this technological standard became a self-reinforcing process: the more people learned to use this design, the less likely it was for competing keyboards to take over.

Even though this prime example is drawn from the history of technological innovations, the path dependence model based on the increasing return principle has often been applied to social institutions. Instead of the diffusion of a technology, the emphasis in such cases is on the societal acceptance of a social institution, for instance, the spontaneous emergence of a social convention. The time path plays a major role, with the diffusion process occurring slowly and sequentially as some institution diffuses through a social network (see Figure 1). Like the image of the trodden trail, a spontaneous social convention emerges through accidental but repeated use: the more individuals follow suit, the more deeply engrained it becomes. Henceforth, the likelihood that people will divert from it progressively declines. Whatever the reasons for its early success, once a critical mass of individuals has adopted the institution, the positive feedback process will stabilize the “trodden trail” as ever more people orient their decisions based on the perception that a sufficient number of other people have already done so.

Four conditions are crucial for the “deterministic”⁵ path dependence theorem (Arthur 1994: Chapter 7; cf. Ackermann 2001):

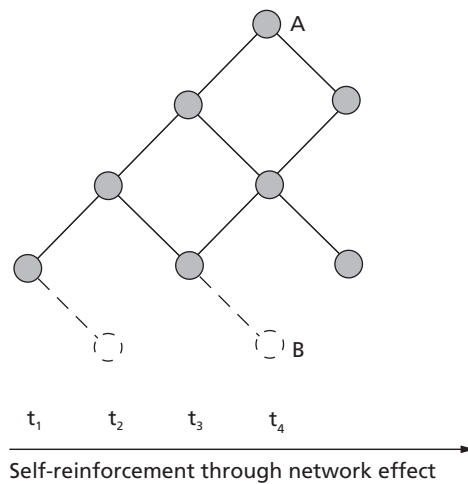
1. The path dependence model assumes an *equal starting condition* with the same initial probability. Theoretically, there are *multiple equilibria* possible since which “path” will be taken depends on chance (tipping more frequently towards one color) during the early stages of the process. For instance, there is no a priori advantage of driving on the right or on the left; however, once a social convention has emerged, it will be very useful for any latecomer to adopt the common practice.

4 David (1984) explained the path dependent self-reinforcement with three mechanisms: system interdependency between hardware (QWERTY keyboard) and software (speed of typing skills). Due to economies of scale, firms would buy QWERTY typewriters since ever more secretaries had learned that new keyboard. Moreover, for individual secretaries the investment in learning QWERTY became a sunk cost; they were hardly willing to learn another new keyboard, especially as their employers were unwilling to pay for such training due to fear of poaching by other employers.

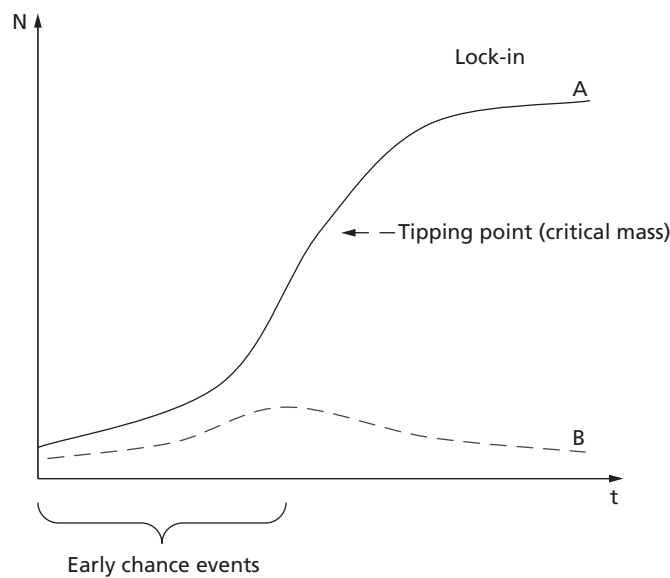
5 Following Mahoney (2000: 507), who argues “that path dependence characterizes specifically those historical sequences in which contingent events set into motion institutional patterns or event chains that have deterministic properties,” I call this approach “deterministic.”

Figure 1 Path dependence I: trodden path

a) Diffusion in a social network



b) Diffusion curve



2. *Self-reinforcing processes* are the social mechanisms that are responsible for one alternative to take a lead over others. The diffusion of an institution occurs in particular through network effects. As more and more people adopt an innovation, the return on its use will increase. For example, the more people are already using email, the higher the return for others to also adopt this means of communication.

3. As a consequence of these self-reinforcing processes, the once taken path will stabilize – a phenomenon commonly called “lock-in.” Its *irreversibility* derives from the fact that actors have already invested in the dominant path (“sunk costs”) and are thus unwilling to switch to an alternate one. Thus, changing from Windows to another operating system such as Linux may be costly, since one would have to learn to use the new system as well as replace all auxiliary software based on the Windows system.
4. According to Arthur, path dependent processes can thus reinforce *inefficient paths*. As the model assumes multiple equilibria and early chance events tip the random walk towards one path, a suboptimal path – at least seen ex post and for society in general – may thus have emerged as persistent. In the case of key-boards, even a more speed-efficient layout hardly has a chance to replace the old less efficient one since it would require overcoming not only the sunk costs for each individual user but also the coordination problem of getting enough old and new users to switch at the same time.

From the perspective of economics, the inefficiency thesis is the most controversial, given that under unfettered market conditions, the most efficient innovation should prevail. Liebowitz and Margolis (1990, 1995, 1999) take issue with the inefficiency claim of path dependence theory, both theoretically and empirically.⁶ They distinguish three forms of path dependence, only the last version of which they see as contradicting neoclassical economics. As per their definition, first degree path dependence reflects a process in which an early chance event may have long-term unanticipated consequences without being inefficient (an unproblematic case for both theories). Second degree path dependence shows *post ante* inefficient long-term consequences, yet individual actors decided rationally on the basis of information available at the time, that is, they would have decided otherwise if they had known. Finally, third degree path dependence is an inefficient outcome that would have been actually remediable: actors were aware that they deliberately chose a suboptimal solution.

There are two problems with Liebowitz and Margolis critique (Ackermann 2001: 35). First, they seem to apply a narrow actor-centered perspective – as if the evolution of a path were solely related to the rational decisions of *independent* actors. Yet path dependence is the evolutionary outcome of multi-actor collective interaction, thus an inefficient macro-level outcome (lock-in of a suboptimal institution) can well be the unintended consequence of the interaction of rational micro-level decisions by indi-

6 David’s QWERTY story was criticized by Liebowitz and Margolis as a “fable” (Liebowitz/Margolis 1990, 1995 and 1996), and they question whether there were indeed more (efficient) alternatives to QWERTY and whether its initial rise was such a chance event. Liebowitz and Margolis extended their criticisms to other common examples for path dependence in technology (VHS vs. Betamax) and raised doubts about the case of Microsoft (Liebowitz/Margolis 1999).

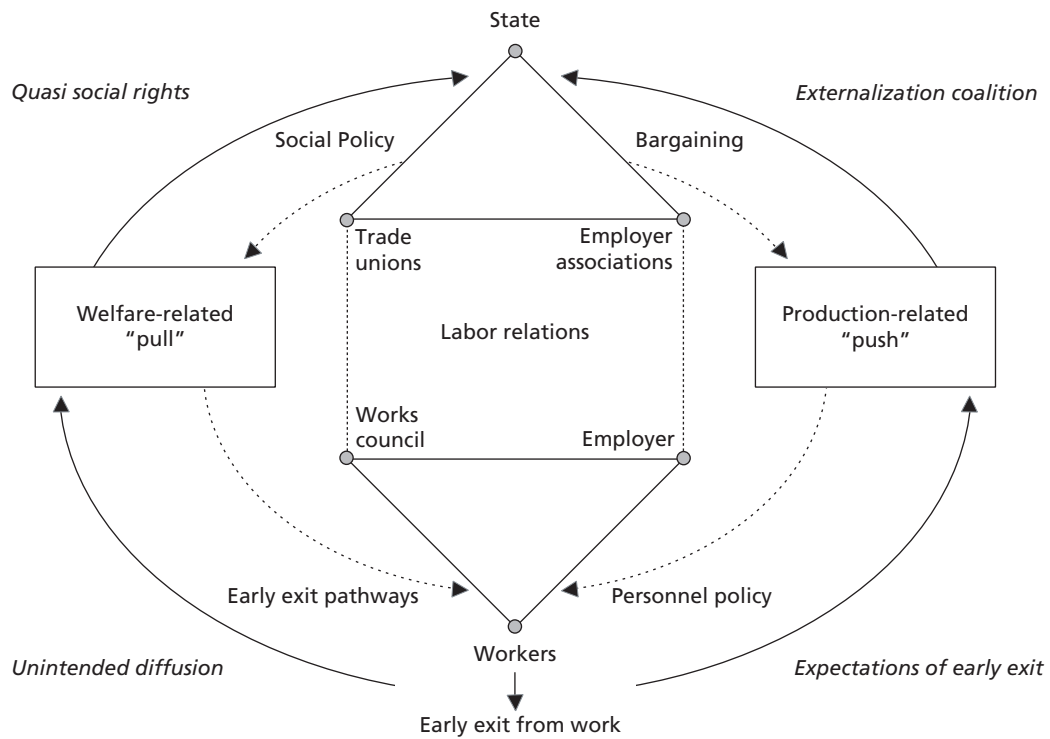
vidual actors. Moreover, by requiring that a once taken path can be switched to remedy inefficiency in their third degree definition, they assume that which the path dependence theorem problematizes. The more the path becomes entrenched, the less likely it will be that the technology (or institution) can or will be easily replaced. It should be noted that Arthur and David both stressed that path dependence does not *always* and does not *necessarily* lead to inefficiency. For non-economists, the main concern is not the merits of the inefficiency thesis but the rather deterministic *lock-in* thesis that denies individual actors' freedom of action and excludes the potential for change.

Since the model assumes that small chance events in the early phase will have crucial long-term effects, both participating individuals and any researcher will find it difficult to predict which path will emerge in the future. Only *ex post* analyses will allow the tracing of paths. Similarly, the necessary critical mass (or tipping point) that has important effects in determining the final outcome of such a non-linear process cannot be predetermined. It too can only be traced retrospectively through analysis of the diffusion curve. However, the model's main problem is that it excludes the individual actors and their strategies as well as the social contexts in which these processes take place (Crouch/Farrell 2004): neither unequal resources at the start, nor the strategic action of individuals – who may seek to change course – are taken into account.⁷

The deterministic path dependence model, in assuming the lasting impact of chance events at the beginning of but not later in the process, necessarily claims the *inflexibility* of institutions. But such “lock-in” of a path seems to be a rather unrealistic assumption since it rules out even gradual adaptations of an institution to the environment that may be necessary for its long-term survival. Indeed, the polya urn model is a *closed system* with an internal feedback mechanism that increases the number of balls of the winning color. An end to the “lock-in” would only be possible through *exogenous* intervening factors, which are certainly outside the theoretical model. Thus, this “deterministic” model can only explain those hyper stable cases of path dependence that follow the assumption of stochastic events and unobstructed self-reinforcing processes.

7 In business administration studies, the active creative role of (Schumpeterian) entrepreneurs and innovators is stressed and technological change occurs through path creation (Garud/Karnøe 2001; but see also for Austrian institutional economics: Fu-Lai Yu 2001). Policy analyses and organizational sociology similarly sometimes assume political entrepreneurs to play a crucial role (Beckert 1999).

Figure 2 Example of path dependence I: early retirement



3 Path dependence example I: unintended consequences of early retirement

Let me illustrate the process of path dependent diffusion with an example from welfare state research, the case of early retirement (see Figure 2) (Ebbinhaus 2006). Early exit from work has become a common social practice for employers to shed labor and for older workers to seek early retirement, particularly since the onset of mass unemployment in the 1970s (Esping-Andersen 1996). Although public policies advanced by the state and social partners in the national arena provided multiple pathways into early retirement, the expansion of such programs was largely an *unintended* consequence of policies not implemented with the explicit purpose of ever-earlier withdrawal from the labor force. Instead, two actor constellations in and across workplaces have promoted the proliferation of this “social innovation”: the older workers (and workplace representatives) support early exits and the employers (and workplace representatives) use it for their own purposes.

As early as the 1930s, sociologist Robert K. Merton delineated several social mechanisms for such *unintended* consequences as a result of diffusion processes (Merton 1936). His well-known example delineates how the rumor of bankruptcy can lead to a

self-fulfilling prophecy: as panicked depositors withdraw their funds, the bank indeed falls into insolvency. Moreover, Merton also pointed out the impact of social comparison (with peers) and social expectations as social mechanisms that have large-scale consequences (Merton 1967). Both processes play a role in explaining the expansion of early retirement and the subsequent difficulties to reverse its course, particularly in Continental Europe (Ebbinghaus 2000). While there are welfare related “pull” factors that explain the effects on labor supply (the decision of ever more workers to withdraw early from work) there are also “push” factors that account for labor demand problems, especially the tendency of firms to shed older workers.

On the “pull” side, public policies provided unintended pathways to retire early (Kohli et al. 1991), for instance, disability rules were increasingly used over time for shedding older workers from work. Moreover, many arrangements set up for particular circumstances became generalized through peer comparisons and public expectations to all sectors and conditions: early retirement programs that had started in particular sectors became a quasi-social right for all. In fact, once a particular cohort had retired earlier; the following cohorts claimed the right to do the same. This holds true particularly in pay-as-you-go systems: workers perceive that they have already paid into a scheme from which their former colleagues went on early retirement and that they have thus earned the same right when they reach the same age. However, this originally unintended diffusion of early exit has had the perverse effect that welfare state expenditures increased and social security contributions had to be raised, leading to further pressures on the labor market (Esping-Andersen 1996). Once the quasi-social right was firmly entrenched, it became very difficult for governments to reverse such policies, or even control the ongoing early exit regimes, not least because there are also “push” factors at work. This self-reinforcing diffusion process of a quasi-social right of early withdrawal in which programs largely intended for other purposes are generalized exemplifies the first type of path dependent processes, the “trodden trail” metaphor.

On the “push” side, employers (or personnel departments) also have good reasons to collude with worker representatives in shedding older workers during a phase of downsizing and/or to maintain a high-skill internal labor market (Ebbinghaus 2001). This is particularly the case when (1) public policies provide possibilities to off-load the costs and (2) early retirement benefits are socially acceptable to workplace representatives. Yet there is also a mechanism of deterministic path dependence at work that leads to unintended consequences (in Merton’s terminology: a self-fulfilling prophecy). Employers defend early retirement by suggesting that older workers are less productive, although empirical evidence has not confirmed this belief (Casey 1997). Regardless of the true productivity rates, once employers assume that workers are leaving earlier, they stop investing in continuing education or retraining measures for workers as their early retirement age approaches. This leads to an ever earlier out-dating of older workers’ skill profiles, which then serves as proof of their lower productivity – a genuine self-fulfilling prophecy. Reversing early exit trends would there-

fore also require the altering of firm-level actors' expectations. Thus, the largely unfounded belief of employers about age-related productivity declines of older workers – in combination with firms' use of early retirement for socially accepted restructuring – leads to a self-reinforcing, self-fulfilling prophecy with long-term negative effects on welfare states.

4 Path dependence II: branching pathways and the structuring of alternatives

Path-dependence is a way to narrow conceptually
the choice set and link decision making through time.
It is not a story of inevitability in which
the past predicts the future. (North 1990: 98–99)

In historical-institutionalist studies, the concept of path dependence has been used in a broader, non-deterministic sense: the concept “path” is not primarily used to describe the emergence and persistence of an (unchanged) institution by repeated uniform basic decisions of individual actors, but the long-term developmental pathway of an institution, or complex institutional arrangement, shaped by and then further adapted by collective actors. Actors are rarely in a situation in which they can ignore the past and decide *de novo*; their decisions are bound by past and current institutions. The main question here is: What are the consequences of path dependence for the further development of an institution? Or in other words: How much do past decisions shape the available alternatives for future ones? The emphasis here is on the *timing* and *sequence* of events (Pierson 2004).

A seminal application of the developmental concept was undertaken by Douglass C. North, who won the Nobel Prize in economics in 1993 for his work in economic history. North posed the question: Why have some societies maintained less efficient developmental paths (North 1990: 7)? Indeed, neo-classical competition theory and international trade theory are challenged by the puzzle of less efficient economic systems that are neither negatively selected nor converge towards a more productive institutional arrangement. According to North, there are three main causes that may explain the persistence of a suboptimal economic pathway (North 1990):

- *Transaction costs* are high due to non-competitive markets – the adaptive mechanisms of prizes do not work properly (cf. North/Thomas 1973).
- *Political factors* obstruct the institutionalization of property rights in such a way that competitive markets cannot operate properly (cf. North 1981).
- The once established institutions become *locked-in* through path dependent self-reinforcement (cf. North 1990).

North, as many other social scientists with an historical approach, uses path dependence in the double sense used in this paper as he refers both to the deterministic path dependence (I) of institutional lock-in due to micro-level diffusion processes as well as to the open developmental path dependence (II) as a sequence of macro-level institutional changes that are shaped by the lower level lock-in. Economic history is only one of many disciplines in the social sciences that have increasingly used the more open path dependence concept to describe institutional development. In fact, comparative historical studies of the development of modern societies have continually used path dependence as a concept to claim that history matters. Beginning in the 1960s, prominent political sociologists Seymour Martin Lipset and Stein Rokkan adopted such a path dependence view *avant la lettre* to explain the genesis and freezing of modern party systems in Western Europe (Lipset/Rokkan 1967).⁸ While the freezing thesis – that the post-war party system was highly institutionalized – seems to rest on a deterministic inertia claim, their diachronical approach was very sensitive to variance in the timing and sequences in social and political cleavages giving rise to distinct party formations across Western Europe prior to the 1960s (Flora 1999).

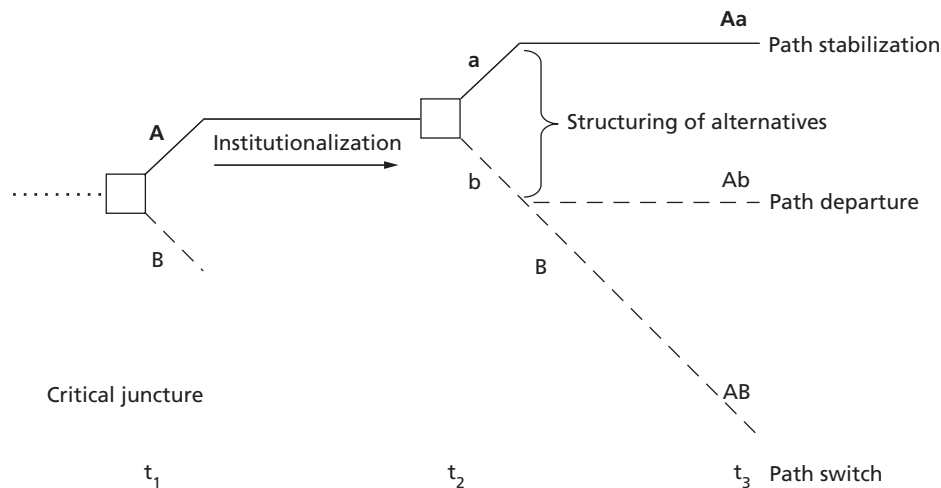
Three features stand out as common themes in the older and newer historical analyses of developmental pathways (see Figure 3):

1. An institution emerges at a *critical juncture* at which collective actors establish new rules. The selection of a pathway is the result of political conflicts and power relations (Knight 1992) during a window of opportunity for action, often opened up through a societal crisis situation (Stinchcombe 1975).
2. A second element is the subsequent process of *institutionalization* through self-reinforcing processes, similar to those described by Arthur and David. Here, positive feedback allows for the societal acceptance of a newly established institution, providing legitimacy and objectivation (Berger/Luckmann [1969] 1977).
3. The third feature is a wider understanding of path dependence in the sense of the *sequence* of contingent decisions. Earlier decisions, once institutionalized, “structure the alternatives” (Rokkan 1999) of later ones.

An example of path dependence as narrowing the choice set is the juridical principle of precedence (and *stare decisis*) in the English common law tradition: courts are bound by past judgments and cannot divert without special reasons, thus reinforcing the traditional interpretation of law over long periods of time (Hathaway 2000). The broader concept of path dependence thus reflects the metaphor of branching path-

8 Not only S.M. Lipset and Stein Rokkan but also Reinhard Bendix ([1964] 1977), Barrington Moore (1966) and Immanuel Wallerstein (1979) developed such developmental perspectives, however, the comparison of these trajectories served very different methodological purposes (Skocpol 1984; Tilly 1984): stressing similarities, uniqueness or variations on the “road to modernity.”

Figure 3 Path dependence II: branching pathways



ways, of sequential junctures at which collective actors decide which of the available alternative pathways they will follow. The claim is that, depending on the timing of previous institutions, their subsequent degree of institutionalization, and particular circumstances of the juncture, the alternatives are structured, with more fundamental changes more costly than gradual ones.

In contrast to the deterministic path dependence theorem that assumes chance events will have long-term consequences, the developmental approach focuses on the particular historical origins of institutions.⁹ Historical institutionalists see institutions emerging from more or less conscious choices by collective actors at critical junctures. Even if it is often impossible to precisely predict a critical juncture, for instance the fall of the Berlin wall in 1989, retrospective analysis can reveal the factors leading to the emergence of a new institution as the result of the interactions of collective action by individual and corporate actors in a given historical situation. However, this does not imply that the institution was necessarily planned or intended to operate in the way it actually emerged. The critical juncture model serves first and foremost as a working hypothesis that needs to be studied in historical comparative research. For instance, was the First World War a break, a catalyst, or the continuation of long-term trends in modern societies?

⁹ The stochastic path dependence theorem of Arthur's poly urn model (named after George Polya) led many theorists of path dependence to make chance events at the beginning a precondition for path dependence (Goldstone 1998; Mahoney 2000). Even if critical junctures are contingent events that could be started by historical coincidence or Cournot effects (Boudon 1984: 168), macro-social change is nevertheless the result of action by collective actors and hardly of "small chance events." For instance, the fall of the Berlin wall may have been triggered by mistakes of the regime, but it still took a mass protest movement before and after 9 November 1989 to accomplish regime change and political transformation.

In comparison to the deterministic path dependence model, the developmental view allows for more openness to change. Analytically, three scenarios of institutional transformation can be distinguished:

- (a) *path stabilization*: marginal adaptation to environmental changes without changing core principles;
- (b) *path departure*: gradual adaptation through *partial* renewal of institutional arrangements and limited redirection of core principles;
- (c) *path cessation or switching*: intervention that ends the self-reinforcement of an established institution and may give way to a new institution in its place.

(a) If an institution is severely entrenched, we can expect *path stability* through marginal adaptation to changing environmental conditions to be the most likely scenario. Long-term stability results not only due to self-reinforcing processes that lead to “lock-in” (according to deterministic path dependence), but also through successful gradual adaptation, often stated under the motto *plus ça change, plus c’est la même chose*. However, it remains an empirical question whether such adaptations are sufficient to stabilize the institution or whether institutional inertia inhibits necessary changes that may facilitate a path departure or even a systemic break.

(b) A *path departure* becomes increasingly likely when more significant changes in the environment occur and the self-reinforcing mechanism provides sufficient resources for gradual adaptation. Here, the most relevant idea is of open path dependence, in which earlier decisions narrow the choice set but do not determine the next adaptive step. Path departure lies between locked-in inertia, when nothing effectively changes the basic foundation, and radical system change, when everything is built *de novo*. Yet between these extremes, path departure also entails various forms and often occurs through a variety of simultaneous processes:

- Long-term *gradual changes* that sum up over time to important reorientations (Pierson 2000b).
- A *functional transformation* through which the same institution serves a different purpose than initially intended (Thelen 2003).
- Institutional *layering* occurs through the addition of (new) institutional arrangements with divergent orientation (Thelen 2003).

(c) The third and least likely possibility is radical transformation – *path cessation* or *path switching*. As in the case of the emergence of institutions, here we would examine the critical juncture at which a change in the opportunity structure led to a freeing-up of societal resources (Stinchcombe 1965) and allowed a shift in the path, not least through the actions of political entrepreneurs. In such cases, it becomes necessary to explain why the self-reinforcing processes have ended and how a new institution could be established in its stead. A voluminous literature in political sociology has investigated the conditions necessary for revolutionary change (see Goldstone 2003)

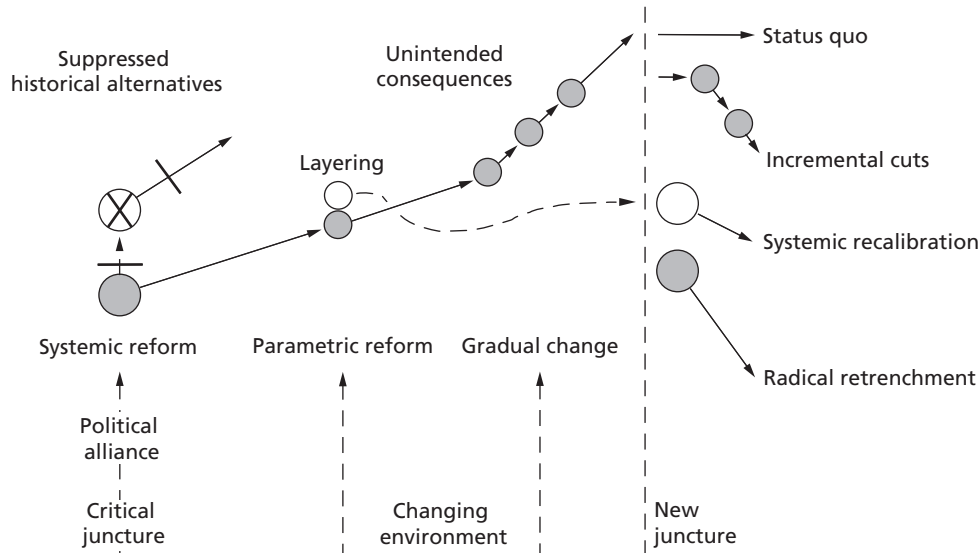
and the conditions for a paradigm change (third order change) in state policies (Hall 1993).

In general, we can conclude that the more open developmental perspective can in principle be used to analyze the different forms of institutional inertia and change. However, when we attempt to explain these different forms of institutional change, we need to go beyond the heuristics of the path dependence metaphor and study the actual processes of change (Thelen 2003). In addition, we need a theoretical underpinning and empirical tests of the social mechanisms that lead to self-reinforcement or may even lead to deinstitutionalization. In the final part, I will turn to these “social mechanisms” (Hedström/Swedberg 1998), that is, middle-range theories that help to explain recurrent social processes such as self-reinforcing feedback.

5 Path dependence example II: multiple pathways of welfare reform

To give an application of the *open* path dependence approach, I briefly discuss multiple pathways of current welfare state reform (see Figure 4). Esping-Andersen’s important study *Three Worlds of Welfare Capitalism* (Esping-Andersen 1990) assumes long-term historical political forces that shape welfare regimes, that is, the redistributive principles and institutional mix of social policies. At critical junctures in the formation of welfare states, new political alliances led to systemic reforms of policies dealing with new social risks in industrial societies (Flora/Alber 1981). Other historical alternatives were not taken – they became “suppressed historical alternatives” (Moore 1978). Thus, the road towards universal citizenship pensions was foreclosed in Germany through the institutionalization of the social insurance for workers under Bismarck in 1889 and again after the Second World War when the Adenauer government’s pension reform of 1957 introduced a full pay-as-you-go system.

For Esping-Andersen, societal forces and historical legacies have led to entrenched regimes or *frozen* institutional landscapes from which they can hardly escape, even when they result in perverse effects. For instance, the Continental European welfare states (Esping-Andersen 1996; Scharpf 2001) are locked into the “welfare state without work” problem. They suffer the Continental dilemma: as passive labor market policies are used to take workers out of work to alleviate labor market disequilibria, the higher the social security cost pressures that in turn lead to higher labor costs and thus yet more pressure to shed labor. Although smaller *parametric* reforms have been implemented in an attempt to shift the costs of social security between different insurance systems, these reforms did not change the status quo. Arguments in favor of path persistence pointed to the difficulties of altering a pay-as-you-go system due to the double-payer problem: the current working generation would have to pay for the acquired rights of pensioners and save for their own future pensions (Pierson 1997).

Figure 4 Path Dependence II: Pension Reform

Because the benefits of a system change would be diffused and can only be received in the future, welfare retrenchment would lead to immediate and concentrated cuts – a change in social policy that are politically difficult to achieve, particularly given the *blame avoidance* of office-seeking politicians (Myles/Pierson 2001). The pay-as-you-go principle in social insurance is certainly a strong self-reinforcing process, resembling the deterministic path dependence theorem.

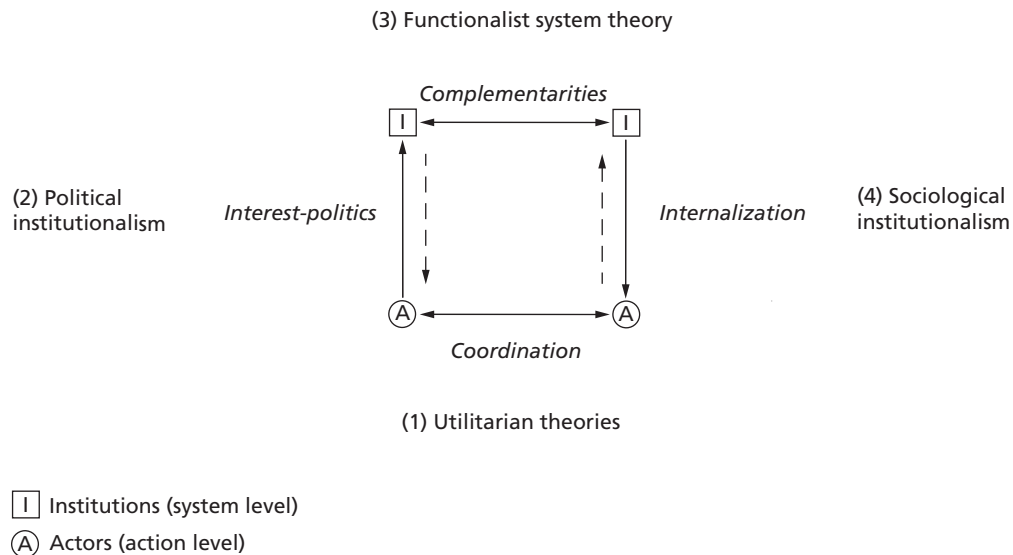
Nevertheless, several welfare states that were said to be frozen landscapes (Esping-Andersen 1996) have been able to adopt substantial reforms (Hinrichs 2000; Taylor-Gooby 1999; Palier 2000; Reynaud 2000). Some welfare states have been able to make up for missed opportunities and reintroduce “suppressed historical alternatives” in particular situations of crisis and then expand upon them. Thus, the Dutch introduced a basic pension system after the Second World War, after emergency measures had temporarily set the ground and private occupational pensions had in the meantime filled the void of earnings-related supplements (Haverland 2001). Those pension systems that already had institutional arrangements, like a private second tier, would not have to introduce such a scheme from scratch but could use these “dormant” historical alternatives to start a gradual process of transforming an old age security system from public towards private provisions. Moreover, minor changes in the past could lead to a long-term gradual transformation, increasing the share of private pensions through a gradual decline in benefits from the pay-as-you-go public system. Gradual changes could thus lead to long-term systemic *recalibration* of a system (i.e. *path departure*); these may also be more acceptable politically, not least because the changes are at first unobservable or too complicated to understand (Myles/Pierson 2001). Grandfathering rules that exempt current pensioners from retrenchment at the expense of cuts for future beneficiaries have been a common device in welfare reforms

negotiated by governments with trade unions, as the core union membership is exempted or less affected by changes (Brugiavini et al. 2001; Ebbinghaus/Hassel 2000). Hence, there does exist a large variety of intermediate changes (*path departure*) in between the extreme cases of status quo maintenance (*path stabilization*) claimed by political scientists and radical system change (*path switch*) often advocated by economists.

6 Institutional theories and self-reinforcing mechanisms

Both perspectives on path dependence share the assumption that self-reinforcing processes foster the stabilization of institutions. Long before the path dependence debate, these processes have been examined as various social science theories studied processes labeled “institutionalization” (Berger/Luckmann [1969] 1977). Economists, sociologists, political scientists and historians have made various contributions to account for the underlying social mechanisms leading to institutional inertia. I group the different institutional theories and the specific mechanisms they emphasize into four analytical types (Mahoney 2000; Ackermann 2001). Using this schema (see Figure 5), I locate the four different social mechanisms by separating the *level* of interaction between actors (micro-level) from the system level of institutions (macro-level), as well as the interaction between these two levels. I discuss these four modes of self-reinforcing mechanisms that are used to explain institutional inertia, utilizing the theoretical approaches closest to them, and will then turn them upside down to explain institutional change. James Mahoney (2000) distinguishes utilitarian, functionalist, power-related and legitimacy oriented approaches, while Rolf Ackermann (2001) delineates three mechanisms: coordination effects, complementarities and interdependence between the regulative and action levels. In my schema, I combine each theoretical paradigm with the social mechanism most prominently associated with its approach. I separate the interdependencies between actor and institutional realm in interest politics (aggregation of interests from the micro to macro level) and internalization (the impact of institutions on actors’ beliefs and actions, see Figure 4).¹⁰

10 Ackermann (2001: 91), an economist, excludes power-based explanations (rent-seeking) from his analysis of institutional “inflexibility,” disregarding the factors that North (1981, 1990) and many others embraced in their institutional analyses. He claims that in these cases a direct intervention takes place and no self-reinforcing mechanism is at work (Ackermann 2001: 91). In contrast, I follow Mahoney sociological perspective and include the power-based explanations of path dependence here because of its importance in institution building (see also Shalev 2001) that has been most prominent in the old institutionalism in sociology (Stinchcombe 1997) and in the new politics institutionalism (Pierson 2000a).

Figure 5 Mechanisms of self-reinforcement

(a) *Utilitarian theories* (institutional economics and rational choice theory in sociology) start from the assumption of rational behavior and focus on *coordination* problems among individuals.¹¹ In this micro-level perspective, the emergence and stability of social institutions is seen as a collective action problem (Olson 1965). A social convention only develops spontaneously when enough actors see sufficient personal utility in it and are willing to contribute to produce a public good. A coordination effect may derive from the *network economies* of scale: the more users in a network that participate, the more everyone (old and new users) will profit from it. An example from geography is the *agglomeration effect* (Arthur 1994: Chapter 4, 6). For a variety of reasons, the first computer software firms started up near Stanford University, but with increased numbers in Silicon Valley the regional concentration became a positive location factor, attracting ever more computer firms.

(b) *Political institutionalists* in political science focus on the role of political institutions and intermediary interest organizations (cf. Hall/Taylor 1996; Thelen 1999).¹²

11 Institutional economics subsumes a variety of theories looking at property-rights, transaction costs and principal-agent relations (Martinsen 2000; Erlei et al. 1999; Furubotn/Richter 2000). Rational choice (RC) theories assume rational action of individual actors and explain institutions as rational coordination games; RC-theory is prominent in American political institutional analysis (Weingast 1996) and sociological studies of collective action (Elster 2000; Hechter/Kanazawa 1997), following in the tradition of Olson (1965).

12 While this approach is known in political science as “New Institutionalism” and historical institutionalism (cf. Hall/Taylor 1996; Immergut 1998; Steinmo et al. 1992; Thelen 1999), it

On the one hand, social groupings have vested sectional interests that they seek to pursue in politics. On the other hand, political institutions and politics shape the opportunity structure and strategic preferences for political action in society. Path dependence in politics may thus result from policy feedbacks through which political institutions shape the interest groupings that are in favor of maintaining a particular status quo (Pierson 1993). An historical example is the German pension insurance for white-collar employees that helped to reinforce and maintain status differences for a century and also led to the separate trade union organization of white-collar interests (Kocka 1981; see also Esping-Andersen/Korpi 1984).

(c) *Functionalist system theory* (Parsons/Smelser 1956) but also more implicitly the new political economy (Hall/Soskice 2001) explain the endurance of institutions through their “embedding” into the overall institutional landscape (Granovetter 1985).¹³ Complementary institutions are interconnected and mutually support each other (Milgrom/Roberts 1994; Schmidt/Spindler 2002). An example of such complementarities is the German dual vocational training system and the diversified quality production system it supports (Soskice 1999). The two systems are functionally interdependent: the vocational training system provides the supply and the production system the demand for highly skilled workers. Even though we should avoid the functionalist pitfall of reading the origins of institutions into their later function (Stinchcombe 1968), once complementarities emerge interdependent institutions do tend to persist (Thelen/Kume 2001).

(d) *Sociological institutionalism* has focused since Emile Durkheim on the normative function of institutions. In addition, cognitive dimensions of institutionalization (internalization) may also reinforce path dependent persistence: dominant behavioral norms in societies are internalized as cognitive schemata and are socialized as taken-for-granted routines that are no longer questioned (Zucker 1977). The new institutionalism in organizational sociology stresses socially accepted routines (Powell/DiMaggio 1991). Organizations adopt institutional isomorphism by copying institutions not for efficiency reasons, but because they are perceived to be legitimate and appropriate (DiMaggio/Powell 1983). An example of isomorphism is the transplantation of the Western German model of university structures to Eastern German tertiary education after the fall of the socialist regime. The Eastern states’ adoption of an established institutional form, despite being increasingly criticized in the West, provided the necessary legitimacy to attract academics, students and resources.

should not to be confused with the neo-institutionalism in organizational analysis (see below).

13 For functionalist system theory, see Parsons (1956, [1951] 1991) and Stinchcombe (1968). The comparative political economy approach (Crouch/Streeck 1997; Hollingsworth/Boyer 1997; Hall/Soskice 2001; Aoki 2001) stresses the institutional embedding of production systems and analyzes their institutional complementarities (for a discussion of its underlying functionalism see Lütz 2003).

From quite different theoretical standpoints, institutional theories use these four social mechanisms to explain institutionalization, leading to an institution's persistence. Yet, we need further empirical studies to test whether and which of these social mechanisms are actually at work and if they indeed are causal in stabilizing a particular institution. Only if such self-reinforcing mechanisms are shown to exist, can institutional theories claim to explain the observed path dependence of institutions.

A central avenue for future research will be to examine whether the processes of institutional change can be explained with the same self-reinforcing social mechanisms simply by turning it upside down. While the chances for path departure may increase with the long-term erosion of self-reinforcing processes (deinstitutionalization), institutional change may also occur suddenly due to historically contingent events that provoke a path cessation or even path switch. Mirroring the discussion of the four social mechanisms used to explain institutional inertia above, the arguments may be turned around to address the cases of path departure and even path cessation.

- (a) In the case of *coordination* effects, path departure could occur through declining economies of scale or through a transformation of the purpose of an existing network. For instance, in the example of agglomeration effects, there could be limits to growth through overcrowding. Moreover, political entrepreneurs in other locations may consciously seek to build a competing network with similar scale effects through policies sponsoring relocation.
- (b) Shifts in *power relations* and new interest groupings are potential causes for politically induced institutional change (Stinchcombe 1968). However, the opportunity costs for political action are differently structured depending upon the institutional context (Immergut 1991): there are often multiple veto points in political decision-making structures that provide leverage to block reforms. Changes in the institutional power structure and the decline in mobilizing power would thus alter the political conditions for a status quo coalition. For instance, the decline in union membership and government-induced reforms of the social partners' self-administration in social insurance schemes increased the possibilities for reform in the Netherlands (Visser/Hemerijck 1997).
- (c) Path departure could occur under conditions of institutional interdependence when *complementarities* wane. While the interlocking between institutions may loosen, an institution may be also endangered through tight coupling with another institution if this complementary institution can no longer provide or has changed its function due to external changes. Thus, the increasing erosion of the voluntary dual vocational training system due to externally induced reasons can have major long-term repercussions on the skill profiles of German firms.
- (d) *Deinstitutionalization* may occur through a change in normative or cognitive processes. This could happen through the delegitimation of an institution, if the script becomes less and less appropriate to real world contexts. New ideas may also lead to paradigm shifts that call taken-for-granted routines into question (Lieberman 2002). Thus, postmodern value changes and new lifestyles have led

to the erosion of traditional social norms without necessarily replacing them by new commonly held norms.

Table 1 Two models of path dependence

	Path dependence I	Path dependence II
Metaphor	Trodden trail	Road juncture
Process	Diffusion of social norm	Structuring of alternatives
Model	Polya urn (see Figure 1)	Decision tree (see Figure 3)
Events	Repetition of basic decision	Sequence of institutional changes
Level	Social network of individuals (micro-level)	Collective or corporate actors (macro-level)
Beginning	Small chance events	Major critical juncture
Momentum	"Tipping point": critical mass of innovators	Later junctures: full, partial or no institutional persistence
Outcome	Deterministic persistence (inertia) through self-reinforcement	Open process of institutional change
Self-reinforcement mechanisms	Coordination (network effects); vested interests (sunk costs); institutional complementarities (system effects); internalization (taken-for-granted)	
Institutional change	External to model (inertia only)	Varying: path stabilization, departure, switch or cessation
Factors of change	Only exogenous	Endogenous (e.g. deinstitutionalization) and exogenous (e.g. revolution)

The study of the social mechanisms of institutional change is certainly still at its beginning (Thelen 2002), partly because the theoretical and empirical work on institutions has thus far concentrated on resistance to change. The deterministic conception of path dependence (I) based on studies of technological innovation has led to a narrow conception of institutional change as non-change (or inertia). The polya urn, given its parsimonious but closed system view, has shaped our understanding of path dependence in a limiting way. The model as such is only an illustration and can neither predict the timing and outcome of the tipping-point, nor does it explain the self-reinforcement process. Increasing attention to the social mechanisms underlying processes of institutionalization has provided more insights into the possible factors contributing to institutional inertia. However, it is the more open path dependence (II) approach delineated above that leads to an increasing attention to institutional change. Adherents to the second perspective study a wider range of long-term institutional evolutionary processes and thus provide ample evidence for a variety of forms in path developments: path continuation, departure, switching or cessation. Although a variety of examples was presented here, the taxonomy of such changes is still being developed, and the social mechanisms and conditions for the different forms have not yet been clearly delineated.

7 Conclusion

In conclusion, I would like to sum up my arguments concerning path dependence and institutional change in four main points (see Table 1). First, path dependence is a concept with at least two established meanings in institutional research that refer to distinct phenomena: micro-level diffusion processes in social networks and macro-level institutional arrangements that shape subsequent (political) decision-making. The first model is fitted to repeated decisions that reinforce each other, given sunk costs, coordination effects, cognitive schemas and vested interests. The empirical examples of the entrenchment of early retirement policies indicate that such processes may lead to unintended consequences, yet that reform is very difficult given institutional lock-in. Second, the deterministic path dependence theorem can only model the persistence of diffusion processes under relatively restrictive conditions, that is, unabated self-reinforcement without external intervention. It can explain neither the emergence nor the change of institutions, since it leaves the former to chance (stochastic tipping point) and rules out the latter (no endogenous capacity for change). Third, the more open developmental approach has thus far served largely as a heuristic for historical research that is flexible enough to describe institutional persistence and change. Certainly, we need to theoretically specify and empirically confirm the social mechanisms of institutionalization and later changes in historical process analyses. Research on welfare state reform has provided new insights into the openness and variety of path dependent changes. Fourth, if institutional path dependence structures the alternatives of subsequent decisions, then it should be possible to systematically study the varying impact of institutional configurations on institutional change and persistence using cross-national comparative analysis. To do just that in the future, we need to develop middle-range theories of institutional change that go beyond a crude fixation on path dependence as persistence and instead help us to explore the potential for path departure that is institutional change in its proper sense. This paper indicates the need for and potential of such an endeavor.

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